

## **Erythrocyte and Leukocyte Biology (ELB)**

The **Erythrocyte and Leukocyte Biology (ELB)** study section reviews applications involving both basic and applied aspects of the blood system, with a focus on hemoglobinopathies, thalassemias; iron and heme metabolism; erythrocyte and granulocyte/monocyte biology, transfusion medicine, and disorders and parasitic infections that involve the formed blood elements.

### **Specific Areas covered by ELB:**

- Hemoglobin structure, synthesis and biochemistry; blood substitutes; abnormal hemoglobins; developmental globin gene regulation; gene expression; sickle cell anemia; and gene therapy for globin disorders.
- Iron and heme metabolism as related to blood disorders, iron overload states and strategies for therapeutic intervention; and sideroblastic anemias, acquired and inherited.
- Immunohematology and transfusion: immunohematologic disorders; autoimmune hemolytic anemia, thrombocytopenia and neutropenia; RBC antigens; blood groups, blood banking, and transfusion medicine.
- Molecular cell biology, biochemistry, and structure of the formed blood elements: myeloid and erythroid cell membrane proteins and receptors; the interaction of myeloid and erythroid cells with the vascular wall; the granulocyte/monocyte and red cell cytoskeleton; subcellular organelles.
- Normal and pathological myelocyte and erythrocyte function; signal transduction involving formed blood elements apoptosis.
- Inherited or acquired hemolytic anemias, including disorders involving the erythrocyte membrane or membrane skeleton and erythroblast biology.
- Toxicology as it impacts the formed blood elements.

### **Shared Interest Within the IRG:**

- HP: The biology of mature myeloid and erythroid cells should be reviewed in ELB. Erythropoiesis and myelopoiesis are appropriate for HP.
- HT: Signal transduction studies in formed blood elements are appropriately reviewed in ELB with the exception of signal transduction in platelets, which is appropriate for HT. Membrane cytoskeleton protein studies are reviewed in ELB if the primary focus is on the cytoskeleton and not the cell type, e.g., spectrin in platelets.

### **Shared Interests Outside the IRG:**

- IRGs 1 and 3 (Biological Chemistry and Macromolecular Biophysics IRG, Molecular Approaches to Cell Function and Interactions IRG): Studies examining the structure and function of membranes or proteins that address questions relative to the physiology or pathology of the blood or elements, are appropriate for ELB. Studies designed to address only general principles of protein or membrane structure or cell function, and that use blood elements primarily as a convenient source of material, may be considered under the auspices of IRGs 1 and 3.
- IRG 6 (Fundamental Bioengineering and Technology Development IRG): Where the response of blood elements to medical devices and systems are primary foci, assignment to ELB might be appropriate. Where the issues are development of new materials or biocompatibility, assignment to IRG 6 may be considered.

- IRG 10 (Immunology IRG): There is a shared interest in immunohematological disorders. Assignment to ELB is appropriate when the focus is on the biology or disorders of erythroid and myeloid cells. IRG 10 may be considered for studies on myeloid cells, particularly when the focus is on their role in immunity. Studies on the biology of mature lymphocytes are appropriate for IRG 10.
- IRG 11 (Infectious Diseases and Microbiology IRG): There is a shared interest between IRG 11 and the ELB for parasitic infections of blood elements such as malaria. If the primary interest is in the blood cells (e.g., macrophages, cytoskeletal proteins), then assignment to ELB may be appropriate. If the main objective is to study the parasite, and characteristics of the infection that relate to the parasite, then assignment to IRG 11 may be appropriate.
- IRG 15 (Cardiovascular Sciences IRG): The interaction of blood elements with the vascular wall is complex and represents an area of shared interest. Where the primary focus of an application is on the biology of myeloid and erythroid cells when they interact with the vascular wall assignment to ELB may be appropriate. Where the primary focus of an application is on the properties of cells and extracellular matrix of the vascular wall, including extravasation, assignment may be to IRG 15.